

ABSTRACT OF THE DISCLOSURE

A crystalline semiconductor film in which the position and size of a crystal grain is controlled is fabricated, and the crystalline semiconductor film is used for a channel formation region of a TFT, so that a high performance TFT is realized. An island-like semiconductor layer is made to have a temperature distribution, and a region where temperature change is gentle is provided to control the nucleus generation speed and nucleus generation density, so that the crystal grain is enlarged. In a region where an island-like semiconductor layer 1003 overlaps with a base film 1002, a thick portion is formed in the base film 1002. The volume of this portion increases and heat capacity becomes large, so that a cycle of temperature change by irradiation of a pulse laser beam to the island-like semiconductor layer becomes gentle (as compared with other thin portion). Like this, a laser beam is irradiated from the front side and reverse side of the substrate to directly heat the semiconductor layer, and heat conduction from the semiconductor layer to the side of the substrate and heat conduction of the semiconductor layer in the horizontal direction to the substrate are used, so that the increase in the size of the crystal grain is realized.